

Notice of Allowability

Application No.

10/743,131

Examiner

Kanji Patel

Applicant(s)

MINAMI ET AL.

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/23/03.
2. ☒ The allowed claim(s) is/are 1-16.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 12/23/03
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. Information Disclosure Statement submitted on 12/23/03 has been considered by the examiner.

Drawings

3. Drawings filed 12/23/03 have been approved by the examiner.

Allowable Subject Matter

4. The following is an examiner's statement of reasons for allowance:

Claims 1-16 are allowed.

The present invention is directed for a scan line interpolation device for generating an interpolated pixel on an interpolated scan line from pixels disposed on at least four consecutive scan lines, including at least two scan lines on each side of the interpolated scan line. The closest prior art, Yamashita et al. (US 5,347, 599) disclose an interpolation apparatus for preventing image deterioration caused by correlation detection errors. The apparatus comprises a calculation means for obtaining the arithmetic means of pixels on the scan lines above and below the line being interpolated, a correlation value detecting means for obtaining the correlation value of the pixels, a setting means for outputting the reference value of correlation, a comparison means for outputting a binary signal set, a determination means for

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determining the interpolation line, and a selection means for selecting and passing the output of the calculation means. Gotanda et al. (US 6,795,123 B2) disclose an interpolation apparatus that generates interpolation pixel values necessary for converting input video data of interlace scanning into video data of progressive scanning is provided. A plurality of candidate pixel-pairs each of which is composed of two pixels that are symmetric with respect to a pixel that is going to be interpolated are selected from pixels on adjacent two scan lines within one field of the input video data, and a difference between pixel values of each selected pixel-pair is calculated. A pixel-pair to be used for generating the interpolation pixel value is determined, based on the smallest difference and the second smallest difference of the calculated differences. An interpolation pixel value of the pixel that is going to be interpolated is generated based on pixel values of the determined pixel-pair. Adams (US 7,023,487 B1) discloses an interlaced to progressive scan video converter which identifies object edges and directions, and calculates new pixel values based on the edge information. However, all the prior art mentioned above fails to teach the limitations of "a pattern matching means for calculating pattern similarity values for a plurality of pixel block pairs, each pixel block pair including two pixel blocks disposed in point-symmetrical positions on opposite sides of the interpolated pixel, each of the two pixel blocks including an identical number of said pixels, the pattern similarity value of each pixel block pair being calculated from values of the pixels in its two constituent pixel blocks " and "a similar edge decision means for deciding whether similar edges are present in corresponding positions in the two pixel blocks constituting each said pixel block pair, on the basis of differences

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between the pixel values of pixels disposed on mutually adjacent scan lines in one of the pixel blocks, aligned in a direction perpendicular to the scan lines, and differences between the values of pixels disposed in corresponding positions in the other pixel block in the same pixel block pair" as required by claims 1 and 15.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Other prior art cited

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hoang (US 6,295,089 B1) discloses up sampled HD MPEG video and half-PEL motion compensation.

Westerman (US 6,262, 773 B1) discloses a system for conversion of interlaced video to progressive video using edge correlation.

Muraji et al. (US 5,886,745) disclose a progressive scanning conversion apparatus.

Wredenhagen et al. (US 6,757,022 B2) disclose a method and apparatus for motion adaptive deinterlacing.

Chu et al. (US 5,367,629) disclose a digital video compression system utilizing vector adaptive transform.

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Handjojo et al. (US 6,940,557 B2) disclose an adaptive interlace-progressive scan conversion algorithm.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kanji Patel whose telephone number is (571) 272-7454. The examiner can normally be reached on Monday to Thursday from 8 a.m. to 6:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lillis Eileen can be reached on (571) 272-6928 The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kanji Patel
Art Unit 2624
5/12/07


KANJIBHAI PATEL
PRIMARY EXAMINER